

## **REMARKS**

Of the 26 original claims, claims 1, 9, 10, 12, 14, 17, 18, 21, 23, and 26 are amended. Claims 2-8, 13, 22, and 24-25 have been cancelled. With this response, claims 1, 9-12, 14-21, 23 and 26 are now pending.

Support for the amendments to the claims can be found on pages 26-27 of the specification, detailing the extension of the SBEII-1 3' sequence towards the 5' end of a mature peptide.

Applicant does not believe that any fees are due at this time; however, should any fees under 37 C.F.R. §§ 1.16 to 1.21 be required for any reason relating to this document, the Commissioner is authorized to deduct the fees from Howrey Simon Arnold & White, LLP Deposit Account No. 01-2508/11951.0005.PCUS00.

### **I. Claim objections**

Claims 9-12, 14-21, and 23 were objected to under 37 CFR 1.75(c) as being in improper form because of improper dependency.

Applicant has amended the currently pending claims to be in compliance with 37 CFR 1.75(c), and believes that the claims are now in proper form.

Consequently, Applicant respectfully requests that the objections to the claims be removed.

## **II. Objection to the specification**

The specification is objected to as not containing an abstract of the disclosure, as required by 37 C.F.R. 1.72(b). The Examiner has indicated that an abstract on a separate sheet is required.

Applicant has included the required Abstract, and maintains that it is substantially identical to that submitted in the PCT application, which was inadvertently not included with the present application when filed. Applicant contends that the included Abstract does not contain new matter.

## **III. Objection under 35 U.S.C. § 101**

Claims 1, 18-21 and 26 were rejected under 35 U.S.C. 101 as being directed to non-statutory subject matter. As specifically indicated by the Examiner, claims 1 and 26 do not differ from naturally occurring sequences found in whole wheat plants, while claims 18-21 are drawn to progeny of transgenic plants wherein the progeny might not be transgenic.

Applicant has amended the claims to recite "isolated" nucleotide sequences, and so believes this objection to be now obviated. Withdrawal of this rejection is respectfully requested.

## **IV. Rejection under 35 U.S.C. § 112, first paragraph**

Claims 1, 7, 9-12, 14-21 and 23 were rejected under 35 U.S.C. § 112, first paragraph, as allegedly being not enabled for claims drawn to any functional equivalent or fragment of a nucleotide sequence, or plant transformation therewith to alter a plant characteristic including starch content or composition. Further, and according to the Examiner, the specification does

not enable any person skilled in the art to which it pertains to make and/or use the invention to which the claims pertain.

The currently pending claims, as amended with this response, are believed to overcome these rejections.

Consequently, Applicant respectfully requests that the rejections of claims 1, 7, 9-12, 14-21 and 23 under 35 U.S.C. § 112, first paragraph be withdrawn.

**V. Rejection under 35 U.S.C. § 112, second paragraph**

Claims 1, 7, 9-12, 14-21, 23 and 26 were rejected under 35 U.S.C. § 112, second paragraph as being allegedly indefinite in claiming the subject matter of the invention. Specifically, the Examiner indicated that the use of the term “functional equivalent” in the claims was broad and ill-defined with the specification, as were the phrase “substantially encoding”.

The currently pending claims, as amended with this response, are believed to overcome these rejections.

Applicant respectfully requests that the rejections of claims 1, 7, 9-12, 14-21, 23 and 26 under 35 U.S.C. § 112, second paragraph be withdrawn.

**VI. Rejection under 35 U.S.C. § 102**

A. Claims 1, 9-12, 14-15, 17-18, 20-21 and 23 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by WO 97/22708 issued to E.J. Du Pont de Nemours and Co. (hereinafter “the Du Pont patent”). Specifically, the Examiner suggested that the claims are broadly drawn to any nucleotide sequence encoding “substantially” any “functional equivalent” of an SBE II-1 enzyme and methods of using such nucleotide sequence, while the Du Pont patent

teaches plant transformation with an expression vector comprising the maize SBE II-b gene in sense and antisense orientation for alteration of starch produced by plant cells and plants transformed therewith.

The pending claims, as amended, are directed to an isolated nucleotide sequence encoding SEQ ID NO: 2. The Du Pont patent does not describe a nucleotide sequence encoding such a protein. In fact, the protein encoded by Du Pont has only a 72% overall, and 90% local similarity with SEQ ID NO: 2. As such, the Du Pont patent cannot be found to anticipate Applicant's claims, as amended. Accordingly, Applicant requests that the rejections of claims 1, 9-12, 14-15, 17-18, 20-21 and 23 under 35 U.S.C. § 102(b) be withdrawn.

B. Claims 1, 9-12, 18-21 and 26 were rejected under 35 U.S.C. 102(b) as being anticipated by Nair, *et al.* ("Isolation, Characterization and Expression of a Starch Branching Enzyme II cDNA from Wheat"; hereinafter "Nair"). Specifically, the Examiner indicated that Nair teaches bacterial cells transformed with an expression vector comprising a wheat starch branching enzyme II gene which has 83.2% local similarity to SEQ ID NO: 1, and which encodes a protein with 86.9% local similarity to SEQ ID NO: 2. Additionally, the Examiner holds that Nair teaches wheat plants that would inherently possess the wheat starch branching enzyme gene of SEQ ID NO: 1 which encodes a wheat SBE-II-1 enzyme, and which wheat plants would be indistinguishable from untransformed progeny of transformed plants.

The pending claims, as amended, are directed to an isolated nucleotide sequence specifically encoding SEQ ID NO: 2. Nair describes only a wheat starch branching enzyme gene which encodes a protein with 86.9% local similarity to SEQ ID NO: 2. This is not the same as encoding SEQ ID NO: 2. That is, an 86.9% local similarity in protein sequences is not

equivalent to 100 % identical protein sequences, and as such, Nair cannot anticipate the pending claims.

Further, according to the Examiner (page 11, paragraph 3 of the Office Action), amendment of the pending claims to address the 35 U.S.C. § 101 rejection would serve to overcome second portion of the art rejection. As the pending claims have been amended as suggested, and in light of the above arguments, Applicant believes that the rejections under § 102(b) have been overcome.

Applicant respectfully requests that the rejections of claims 1, 9-12, 14-15, 17-18, 20-21 and 23 under 35 U.S.C. § 102 be withdrawn.

## **VII. Rejection under 35 U.S.C. § 103**

Claims 7, 14-21 and 23 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Chibbar, *et al.* ("Genetic Engineering of Wheat for Starch Modifications"; hereinafter "Chibbar") in view of the Du Pont patent and Nair, *et al.* ("Isolation, Characterization and Expression of a Starch Branching Enzyme II cDNA from Wheat"; hereinafter "Nair"). Applicant respectfully traverses the rejection on the grounds that the Examiner has not shown that the cited references, taken separately or in any combination, disclose all of the elements of Applicant's claimed invention.

The Examiner asserted that it would have been obvious to one of skill in the art to use the method of wheat transformation with starch branching enzyme II genes as taught by Chibbar, and to modify that method by incorporating the functional equivalent of the wheat starch branching II-1 gene as taught by the Du Pont patent and Nair.

Claim 7 has been cancelled with this communication, rendering its rejection moot. Further, the cited references, even when combined, fail to teach all of the claim limitations of pending claims 14-21 and 23. Similarly, there exists no motivation to combine the cited references to produce the invention claimed by the Applicant because none of the references teach an isolated nucleotide sequence encoding a protein with the amino acid sequence of SEQ ID NO: 2. According to MPEP § 706.02(j), for a claim to be obvious, there must be a) a suggestion or motivation to combine reference teachings, b) a reasonable expectation of success, and/or c) the references must teach all of the claim limitations, *In re Vaeck*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991).

Specifically, none of the cited art, even in combination, teaches or suggests a method of altering the characteristics of a plant by introducing into the plant the protein of SEQ ID NO: 2 operably linked to a promoter, or making altered starch by altering a plant by such a method.

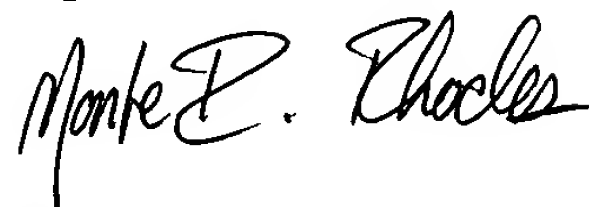
Additionally, none of the cited reference suggests combining the teachings to generate Applicant's instantly claimed invention. That is, the three references do not teach all of the claim limitations for pending claims 14-21 and 23. Accordingly, Applicant requests that the rejections of claims 14-21 and 23 under 35 U.S.C. § 103(a) be withdrawn.

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In light of the above amendments and remarks, reconsideration and withdrawal of the outstanding objections and rejections are respectfully requested.

The Examiner is encouraged to call the undersigned should any further action be required for allowance.

Respectfully submitted,



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